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ABSTRACT

Evaluated was the effectiveness of daily 10-minute sessions in a structured language training program (Teaching the American Language to Kids) with 72 moderately retarded students ages 5- to 13-years. Lee's Developmental Sentence Scoring of free speech samples was used as the pre- and posttest. Gain scores of 17 experimental Ss (students who had met the test's minimum sentence production requirement) were significantly higher than scores of 12 control subjects, and comparison of pre- and posttest measures within the experimental group also indicated a significant gain. (CL)

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WITH MODERATELY RETARDED CHILDREN

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ABSTRACT

This study evaluated the effectiveness of a structured language training program, Teaching The American Language to Kids (TALK) when used with moderately retarded pupils, for seven months of an academic year. Lee's Developmental Sentence Scoring of free speech samples was used as the pre and post test.

Comparison of gain scores between 17 experimental and 12 control subjects resulted in a significant difference in favor of the experimental group. Pre and post comparison of scores within the experimental group also indicated a significant gain.

EFFECTS OF A STRUCTURED LANGUAGE TRAINING
PROGRAM WITH MODERATELY RETARDED CHILDREN¹

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Many retarded persons exhibit problems in language development (Dever, 1971a; Keane, 1972; Lillywhite & Bradley, 1969; Rosenberg, 1968; Semmel, 1967; Webb & Kinde, 1967). This is not surprising since below average functioning on linguistic tasks such as those included on the Binet and Wechsler IQ tests is a significant element of the definition of mental retardation.

Studies on retardates' performance with the syntactic and morphological aspects of language (Bateman & Wetherel, 1964; Dever, 1971b; Dever & Gardner, 1971; Lovell & Bradbury, 1967) indicate that retardates do more poorly than both their chronological age normal peers and normal children of the same mental age on tasks which require production of appropriate inflectional endings.

Semmel (1967) contends that retarded children utilize primarily sequential strategies in processing linguistic information

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as compared with the grammatical strategies used by non-retarded children, especially older, normal children. These results were obtained by comparing the performance of normal and retarded children in a sentence completion (cloze) task and a word association task. Results of similar studies (Bartel, 1970; Semmel, Barritt, & Bennett, 1970; Semmel, Barritt, Bennett, & Perfetti, 1968) supported Semmel's (1967) contention.

Studies by Goda (1964) and Lovell, Hersee, & Preston (1969) indicate that retardates use relatively fewer adjectives, adverbs, and function words than adults or normal children.

While a large body of research delineates a variety of specific linguistic deficits among retarded individuals, little has been done to evaluate the sentence production abilities of retardates. Bartel, Bryen, & Keehn (1973) note that most studies on attempts to effect speech behavior in retarded persons use the operant conditioning approach (Barton, 1970; Bricker & Bricker, 1970; MacAulay, 1968; Peins, Gregerson, & Sloan, 1970).

In a promising approach to teaching the more abstract grammatical constructions to retardates Dever (1971b) has developed a sequential series of lessons based on the procedures used in the Teaching of English as a Foreign Language.

Dever's (1971b) program, Teaching the American Language to Kids (TALK), addresses itself to teaching appropriate sentence

patterns to children who function linguistically at a low level, i.e., who can produce at least grammatical two word utterances (pivot-open combinations), and is concerned with problems of language development rather than with motoric aspects of speech. In accord with the notion that children are biologically programmed to acquire language (Lenneberg, 1967; McNeil, 1966), the TALK program is based on the hypothesis that children who exhibit language acquisition deficiencies do not organize properly the massive amounts of incoming primary linguistic data from which their peers extract the grammar of the language and that organization of this primary linguistic data will effect activation of the language acquisition mechanism.

The essential activity of the TALK program is drill, with choral response as the major form of drill. Three types of drill are used in the program:

- (1) Conversion drill is a drill pattern sequence in which one type of utterance is converted to another. For example, the teacher may ask a question to elicit a statement or vice versa, e.g.:
T: Ask me if that is a dog.
C: Is that a dog?
- (2) In dialogue drill several different patterns from previous lessons are used in such a way that the drill seems to consist of mini conversations.
- (3) In chain drill children both respond and present stimuli to each other, with conversation always a major component.

The highly structured nature of the program and the short, sequential, and cumulative lessons are characteristics which make

it most suitable for use with moderately retarded children in a classroom setting.

The purpose of the research reported here was to investigate the efficacy of the TALK materials when used with moderately retarded youngsters.

PROCEDURES

Sample

A total of 72 pupils in six classes in a public school for moderately retarded children was selected for study. Because of the constraints of the TALK program, i.e., group teaching, intact classes rather than individual pupils were randomly assigned to experimental or control conditions. Chronological ages of the pupils ranged from 61 to 161 months. Mean CAs were 110.66 months for the experimental group and 115.16 months for the control group. Mean CAs for the two groups were not significantly different ($t = 0.95$, $df = 70$).

Method

A pre-test - post-test control group design was planned as the most appropriate design for assessing the effects of the experimental treatment (the TALK program). Since no specific evaluation instrument is included in the TALK materials Lee's Developmental Sentence Scoring (DSS) procedure (Lee and Carter,

1971)
~~1969~~) was selected as the criterion instrument because it provides a more appropriate estimate of sentence production ability than other language evaluation devices. Prior to the beginning of the experimental treatment data was collected on all experimental and control subjects. Two teams of two data collectors tape recorded free speech samples on all pupils and transcribed the recordings. Each pupil's free speech transcript was then evaluated using the DSS.

The DSS procedure requires that a sample of at least 50 scorable "sentences" be produced by each subject. Inspection of the transcripts from both groups revealed that only 18 experimental and 12 control subjects had produced the minimum 50 scorable utterances. Further, a total of five experimental and 11 control subjects had produced between 10 and 49 scorable sentences, along with 13 experimental and 13 control subjects who produced fewer than 10 scorable sentences. Because of the ranges of sentence productivity described, the pre-test post-test control group design was limited to the subject producing 50 scorable utterances. Non-parametric analyses of data were planned for the groups in other categories.

Before the TALK program was implemented in the experimental classes, the three teachers of these classes participated in an intensive two-day workshop of instruction and demonstration of the use of the materials. The experimental treatment, daily 10-minute TALK lessons, commenced in mid-October and continued

through mid-May of one academic year for a total of nearly seven months. Pupils in the control classes received no specific language training other than that which was normally included by their teachers, typically material from Peabody Language Development Kits. Within each experimental class, pupils were placed by their teachers into one of two groups so that in each class two TALK lessons were conducted each day. This grouping was implemented for two reasons: to maintain optimal group size for the lessons and to maintain a general homogeneity of groups with regard to language ability. However, teachers were free to move pupils from one group to another within their classes if appropriate.

Statistical Procedures

Because of pre-test variability in sentence production in both experimental and control conditions separate analyses of data were performed on pupils producing the minimum 50 scorable sentences and on those producing less than 50 scorable sentences.

For the group of experimental and control subjects, $n = 17$ and $n = 12$ respectively (there was attrition of one experimental subject) a t-test on DSS gain scores was performed.

For the group of experimental and control subjects producing fewer than 50 scorable sentences on the pre-test ($n = 17$ experimentals and 24 controls, representing attrition of one experimental pupil), the sign test (Siegel, 1956) was used to assess

the direction of change in each group on DSS scores and on the number of sentences produced.

RESULTS

Subjects Producing 50 Sentences on Pre-test

Mean DSS gain scores of 17 experimental and 12 control subjects were compared using the t-test procedure. Mean gain for the experimental group was 0.5458; for the control group mean gain was -0.5933. The difference between mean gain scores of 1.1391, in favor of the experimental group, was found to be significant ($t = 2.1371$, $df = 27$) at the .025 level of confidence for a one-tailed hypothesis.

Subjects Producing <50 Sentences on Pre-test

Because a large proportion of the total sample (18 experimental and 24 control subjects) did not meet the criterion (50 scorable sentences on pre-test) for inclusion in the experimental design, non-parametric analyses of data available from this group were performed. Attrition of one experimental subject resulted in sample sizes of 17 experimental and 24 control subjects for these analyses. Since data for this sample were incomplete, i.e., some pupils produced no sentences on the pre-test and some no sentences on the post-test, the sign test (Siegel, 1956) was used to assess

the frequency and direction of change from pre-test to post-test on two variables, DSS scores and number of scorable sentences produced. Because of the nature of the sign test, no experimental vs. control comparisons could be made.

Within the experimental group of 17 subjects, 12 made positive gains in DSS scores, four had no change in DSS scores, and one made a negative gain. With an effective n of 13 the probability of this occurrence was found to be $p = .002$. Of the 24 control subjects, 12 made positive gains in DSS scores, four had no change, and eight made negative gains. With an effective n of 20, the probability of this occurrence was found to be $p = .252$. In both groups, pupils who achieved no change produced no scorable sentences on either pre-test or post-test.

Changes in numbers of sentences produced within each group also were analyzed using the sign test. Within the experimental group 10 subjects made positive gains, four had no change, and three made negative gains. With an effective n of 13, the probability of this occurrence was $p = .046$. Within the control group 13 subjects made positive gains, four had no change in the number of sentences produced, and six made negative gains. The probability of this occurrence was $p = .084$.

DISCUSSION

While a significant difference between groups on DSS gain scores was found, the negative mean gain for control subjects raised questions as to the significance of gains within the experimental group. To determine the significance of the difference between pre-test and post-test DSS scores within the experimental group, the t-test for correlated samples (Ferguson, 1966) was used. This analysis resulted in an obtained t statistic of 1.8188 with $df = 16$ and was significant at the .05 level (one-tailed). Thus, with differences in gain scores between groups and pre and post differences within the treatment group found to be significant, the hypothesis that the treatment (the TALK program) would effect gains was not rejected for the subsample which produced 50 scorable sentences on the pre-test.

While no between group hypotheses could be tested with the non-parametric procedures used on the remainder of the sample, differences in probability levels suggest that experimental subjects made language gains in a positive direction to a greater extent than did control subjects. Over the entire sample, evidence reported here indicates that the TALK program was successful in effecting improvement in the language ability of the sample of retarded pupils studied.

One major recommendation made for further research is that, in addition to the DSS, a criterion-referenced measure be used to assess the effectiveness of TALK lessons. A major disadvantage of the DSS is that dialect variations may affect a child's score considerably. Colloquial speech often does correspond to Standard English patterns as measured by DSS and such colloquial patterns, when they appear in transcripts must be scored carefully and consistently. Finally, the difficulty of eliciting "spontaneous" language is most difficult with retarded youngsters. This particular difficulty may, in part, account for some of the negative gains obtained from both experimental and control subjects.

However, an alternate explanation for the lack of sentence production is that some of the children included in this study were not able to produce two-word, pivot-open utterances even in non-stressful classroom situations. Linguistic functioning at this minimal level is critical to the TALK program.

Reports from teachers of the experimental classes indicated that some pupils, frequently young children, had never spoken. Thus, the TALK program may have been not effective with such children because they had not attained even the minimal linguistic skills necessary to profit from the program.

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